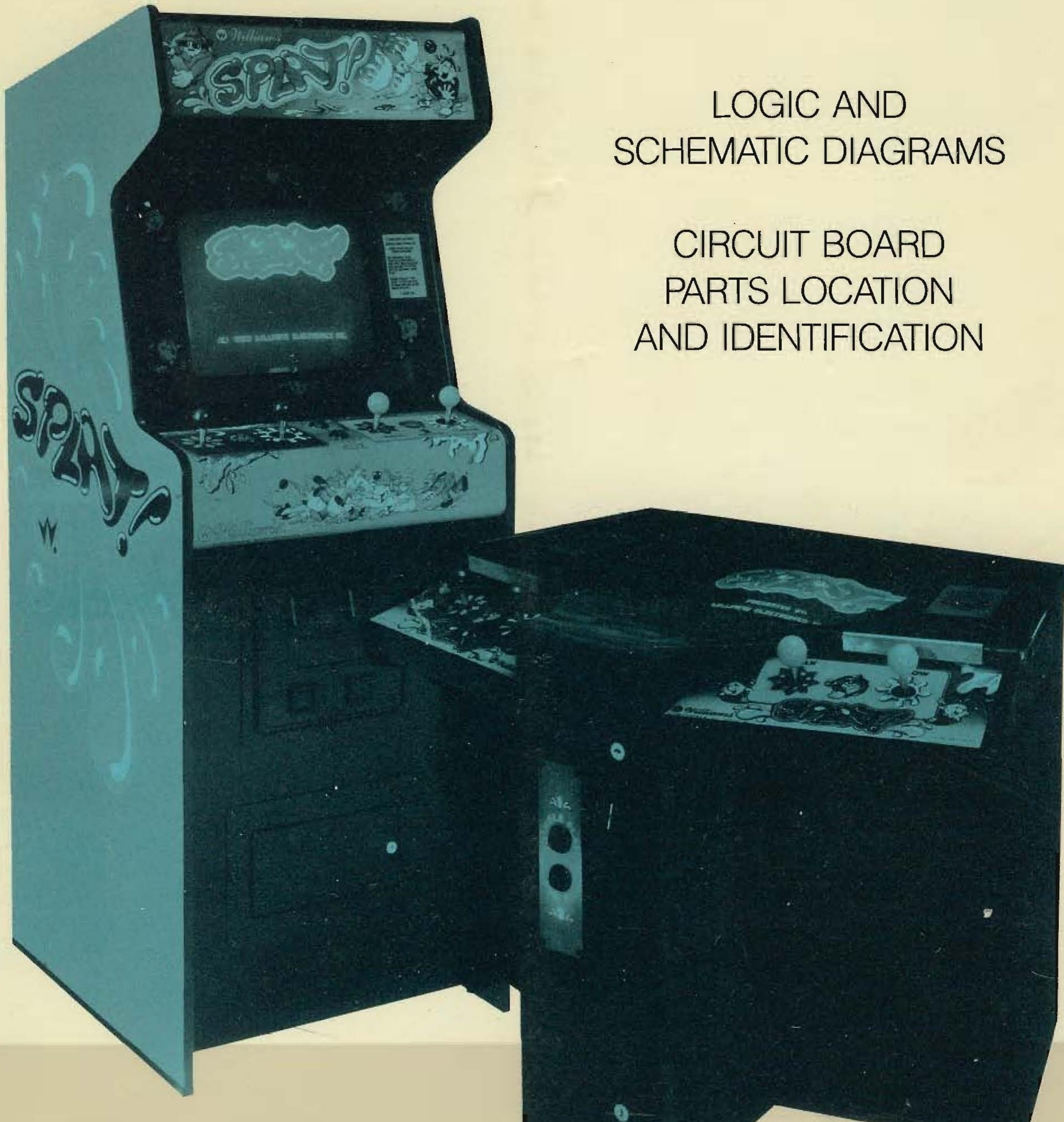
16-3011-103

Williams®

Drawing Set

SPLAT!™

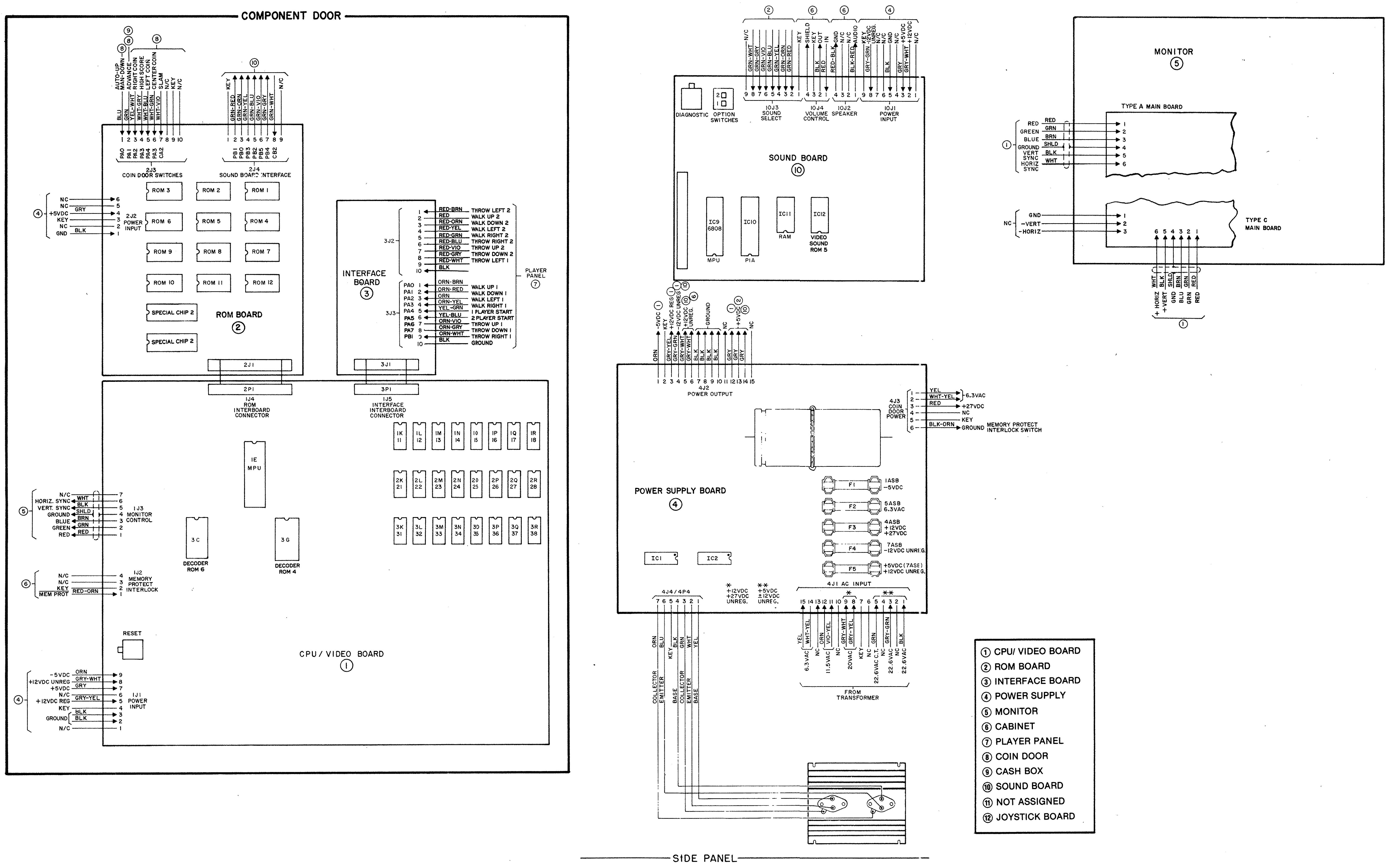


LOGIC AND
SCHEMATIC DIAGRAMS

CIRCUIT BOARD
PARTS LOCATION
AND IDENTIFICATION

CONTENTS

INTERBOARD WIRING



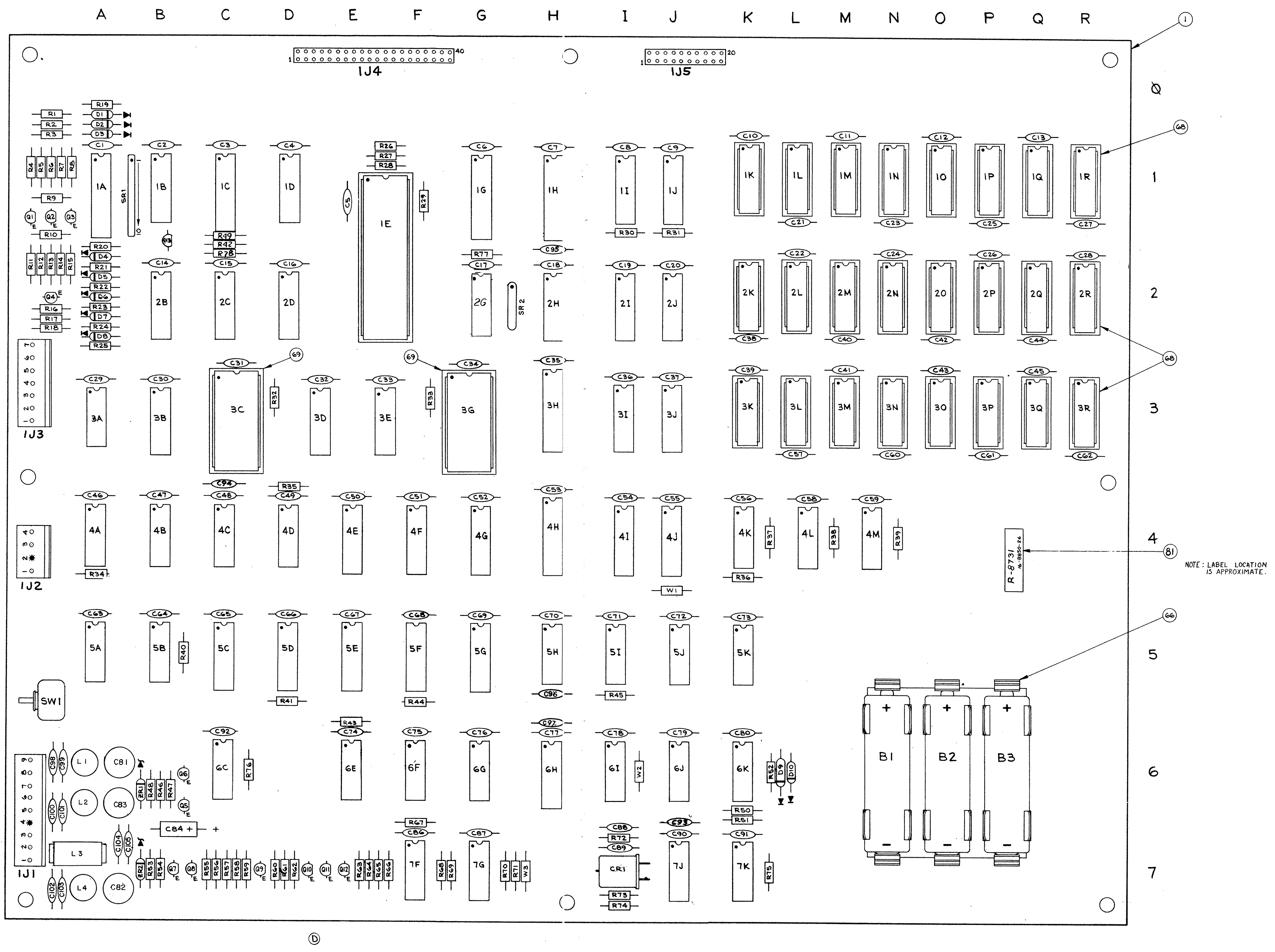
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
74	5791-09497-00	1J3	7 PIN HEADER 09-65-1071	1
75	5791-09027-00	1J1	9 PIN HEADER 09-65-1091	1
76	5019-09669-00	SR1	RESISTOR, 1 K OHM 10 PIN SIP	1
77	5010-09534-00	W1, W2, W3	RESISTOR, C.F. 0 OHM 1/4 WATT	3
78	5340-09689-00	1C	5114 1K X 4 CMOS STATIC RAM	1
	5340-09667-00		6514 1K X 4 CMOS STATIC RAM	0
79	5281-09483-00	1B, 2B	74LS189 16 X 4 RAM	0
	5280-09625-00		7489 16 X 4 RAM	0
	5282-09716-00		74S189 16 X 4 RAM	0
	5281-09715-00		74LS289 16 X 4 RAM	2
	5282-09717-00		74S289 16 X 4 RAM	0
80	5641-09371-00	SW1	PUSH BUTTON SW. SPST	0
	5641-09312-00		PUSH BUTTON SW. DPDT MOM.	1
81	16-8850-26	——	LABEL PCB ASSY I.D.	1
82				
83	5019-09786-00	SR2	SIP 4.7KΩ 5R 6 PIN 5% 125 W/R@70°C	1
84	5281-09856-00	1H, 3H, 4H	OCTAL LATCH 74LS373	3
85				
47	5010-09035-00	R64	RESISTOR, C.F. 47K OHM 5% 1/4 W.	1
48	5551-09822-00	L3	COIL, 4.7 µH, 3A	1
49	5010-09001-00	R2, R21, R24	RESISTOR, C.F. 330 OHM 5% 1/4 W.	3
50	5010-09039-00	R56	RESISTOR, C.F. 10 OHM 5% 1/4 W.	1
51	5043-09491-00	C89, C93	CAPACITOR, AXIAL 22 PFD. 1K V. ±10%	2
52	5043-09492-00	C88,	CAPACITOR, AXIAL 100 PFD. 50 V. ±10%	1
53	5040-09545-00	C84	CAPACITOR, AXIAL 22 MFD. 10 V. ±20%	1
54	5043-09065-00	C94 THRU C97	CAPACITOR, AXIAL 470 PFD. 50 V. X7R ±20%	4
55	5043-08996-00	SEE NOTE #3	CAPACITOR, AXIAL .1 MFD. 50 V. ±20%	85
56	5040-09421-00	C81, C82, C83	CAPACITOR, RADIAL 100 MFD. 25 V. +50 -10%	3
57	5075-09059-00	ZR2	1N5990A 3.9 V. ZENER DIODE	1
58	5075-09018-00	ZR1	1N5996A 6.8 V. ZENER DIODE	1
59	5070-08919-00	D1, D2, D3, D4, D5, D6, D7, D8	1N4148 DIODE, SILICON	8
60	5070-09266-00	D9	1N5817 DIODE, SILICON	1
61	5160-08938-00	Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q13	2N4401, TO-92 TRANSISTOR, NPN	8
62	5190-09016-00	Q1, Q2, Q3, Q4, Q12	2N4403, TO-92 TRANSISTOR, PNP	5
63	5520-09495-00	CR1	12 MHZ CRYSTAL	1
64	5043-09845-00	C98-C105	CAPICITOR, AXIAL 1000 PFD 50V ±20%	8
65	5880-09022-00	B1, B2, B3	BATTERY ALKALINE 1.5 V. (AA)	3
66	5881-09021-00	—	BATTERY HOLDER #171	1
67	5700-09628-00	—	14-PIN IC SOCKET	0
68	5700-09006-00	—	16-PIN IC SOCKET	24
69	5700-09004-00	—	24-PIN IC SOCKET	2
70	5700-08985-00	—	40-PIN IC SOCKET	1
71	5791-09437-00	1J5	20 PIN RIBBON CABLE HEADER	1
72	5791-09349-00	1J4	40 PIN RIBBON CABLE HEADER	1
73	5791 09028-00	1J2	4 PIN HEADER 09-65-1041	1

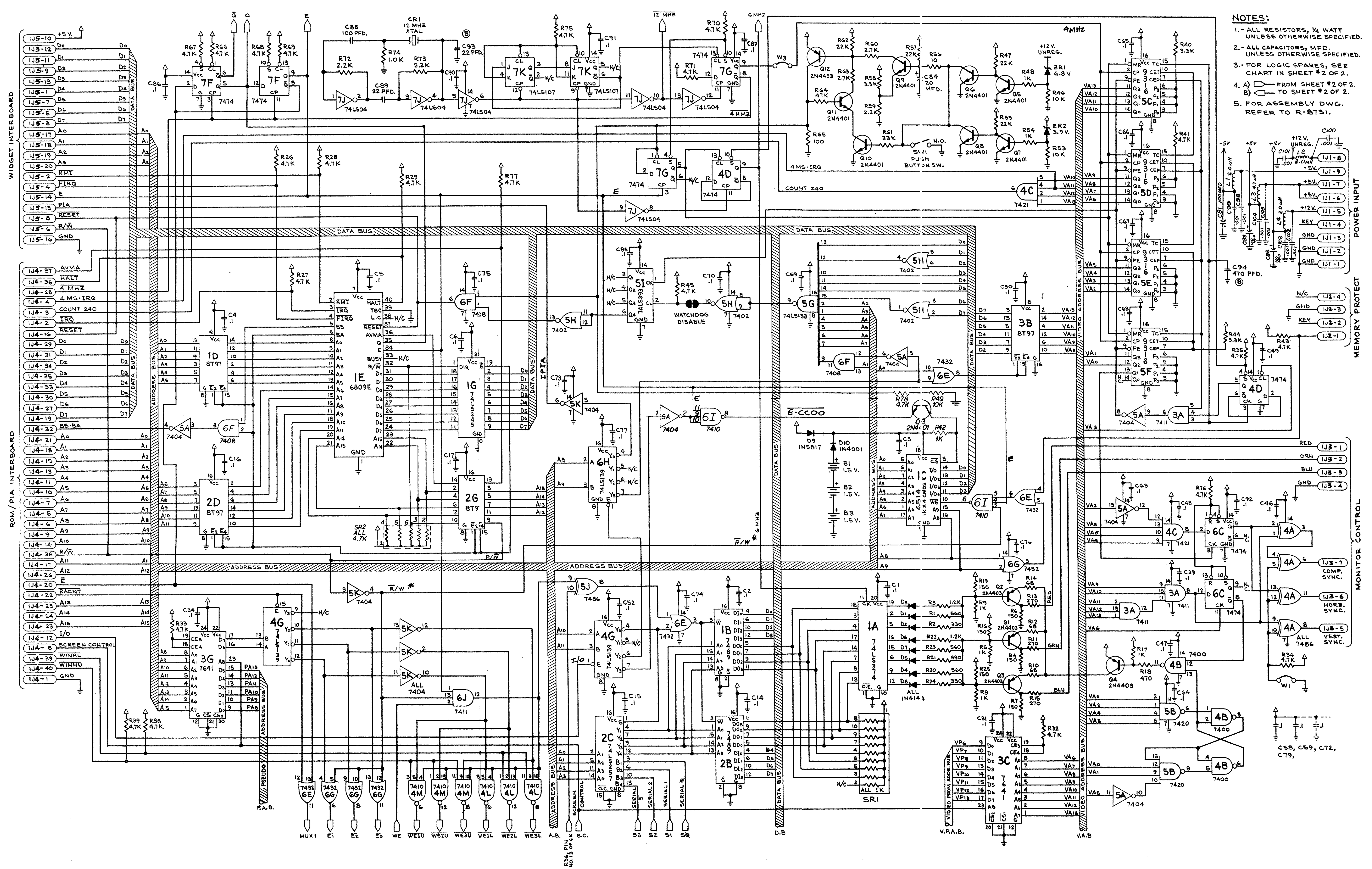
NOTES:

1. 4116: 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 1R,
2K, 2L, 2M, 2N, 2O, 2P, 2Q, 2R,
3K, 3L, 3M, 3N, 3O, 3P, 3Q, 3R
2. 4.7K Ω RESISTOR:
R26, R27, R28, R29, R32, R33, R35,
R36, R37, R38, R39, R41, R43, R45,
R50, R51, R52, R66 R67 R68, R69,
R70, R71, R75, R34, R76, R77, R78
3. .1 MFD. CAPACITORS:
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10,
C11, C12, C13, C14, C15, C16, C17, C18, C19, C20,
C21, C22, C23, C24, C25, C26, C27, C28, C29, C30,
C31, C32, C33, C34, C35, C36, C37, C38, C39, C40,
C41, C42, C43, C44, C45, C46, C47, C48, C49, C50,
C51, C52, C53, C54, C55, C56, C57, C58, C59, C60,
C61, C62, C63, C64, C65, C66, C67, C68, C69, C70,
C71, C72, C73, C74, C75, C76, C77, C78, C79, C80,
C86, C87, C90, C91, C92
4. FOR SCHEMATIC REFER TO 16-8809

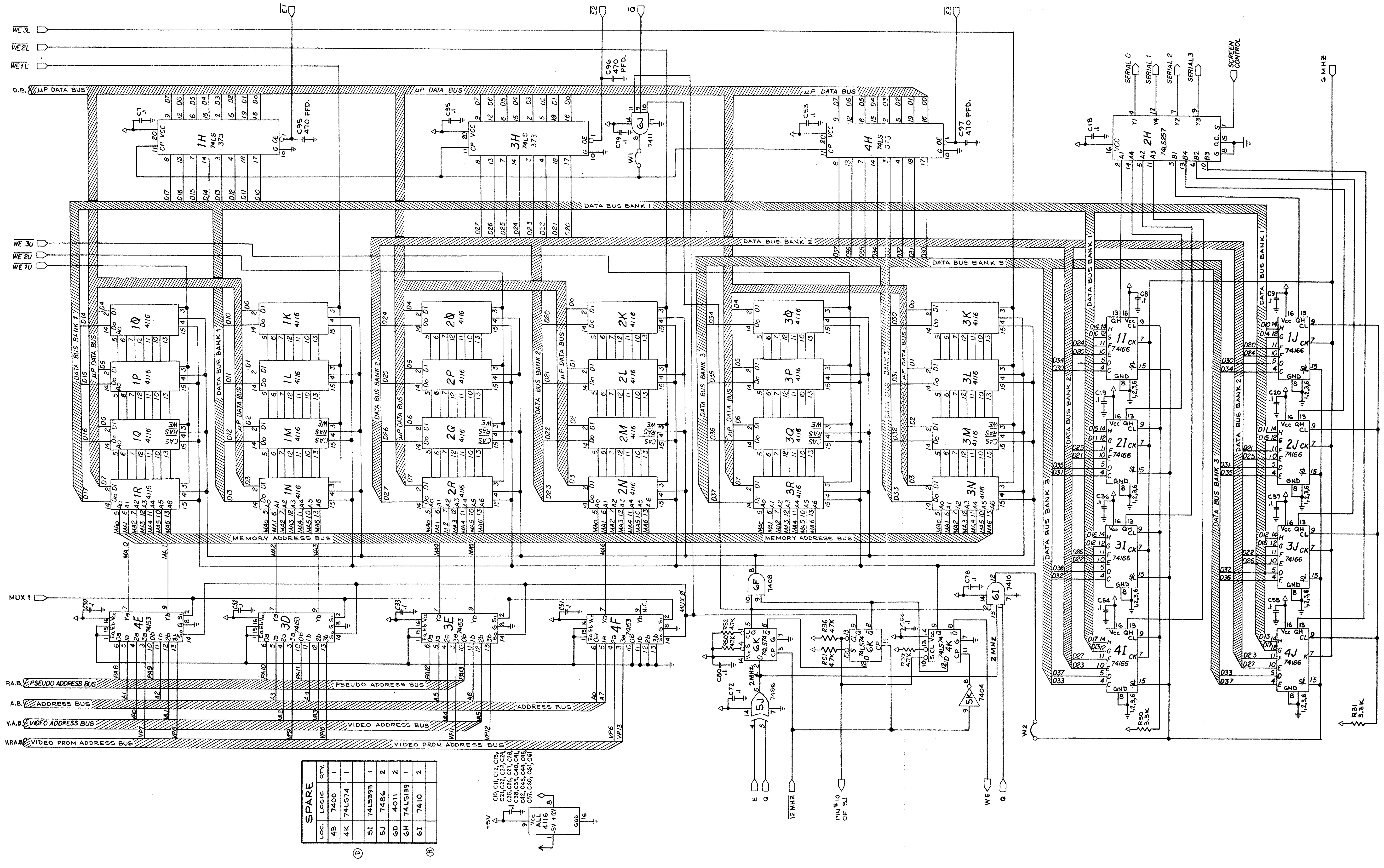
BILL OF MATERIAL

ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
1	5770-09656-00		BARE P.C. BOARD REV. D	1
2	5280-09073-00	4B	7400 QUAD 2-INPUT NAND	1
3	5280-08948-00	5H	7402 QUAD 2-INPUT NOR	1
4	5281-09215-00	7J	74LS04 HEX. INVERTER	1
5	5280-09013-00	5A, 5K	7404 HEX. INVERTER	2
6	5280-08973-00	6F	7408 QUAD AND	1
7	5280-09011-00	4L, 4M, 6I	7410 TRIPLE 3-INPUT NAND	3
8	5280-09475-00	3A, 6J	7411 TRIPLE 3-INPUT AND	2
9	5280-09530-00	5B	7420 DUAL 4-INPUT NAND	1
10	5280-09476-00	4C	7421 DUAL 4-INPUT AND	1
11	5280-09477-00	6E, 6G	7432 QUAD 2-INPUT OR	2
12	5280-09478-00	4D, 4K, 6K 6C, 7F, 7G	7474 DUAL-D TYPE FLIP-FLOP	6
13	5280-09479-00	4A, 5J	7486 QUAD 2-INPUT EX-OR	2
14	5281-09480-00	7K	74LS107 DUAL J-K FLIP-FLOP	1
15	5281-09532-00	5G	74LS133 13-INPUT NAND	1
16	5281-09246-00	4G, 6H	74LS139 DUAL 2 to 4 LINE DECODER	2
17	5280-09481-00	3D, 3E, 4E, 4F	74153 DUAL 4 to 1 DATA INVERT	4
18	5280-09668-00	1I, 1J, 2I, 2J 3I, 3J, 4I, 4J	74166 8-BIT SHIFT REGISTER	8
19				
20	5281 09308-00	1G	74LS245 OCTAL BUS TRANSCEIVER	1
21	5281-09485-00	2C, 2H	74LS257 QUAD DATA MULPX.	2
22	5370-08989-00	1D, 2D, 2G, 3B	8T97 HEX. TS BUFFER	0
	5281-09385-00		74LS367 HEX BUS DRIVER	4
23	5281-09486-00	1A,	74LS374 OCTAL D-TYPE FLIP-FLOP	1
24	A-5342-09821	3C	UNIVERSAL VERT. DECODER ROM 6	1
25	A-5342-09694	3G	UNIVERSAL HORZ. DECODER ROM 4	1
26	5551-09898-00	L1, L2, L4	COIL, 2.0 µH, .5A	3
27	5281-09533-00	5I	74LS393 DUAL 4-BIT BIN. COUNTER	1
28	5340-09488-00	SEE NOTE #1	4116 (450 ns ACCESS) 16 K x 1 DYNAMIC RAM	24
29	5070-06258-00	D10	1N4001 DIODE	1
30	5280-09489-00	5C, 5D, 5E, 5F	9316 4-BIT BIN. COUNTER	4
31	5400-09490-00	1E	6809 E MICROPROCESSOR	1
32	5010-09548-00	R10, R12, R14	RESISTOR, C.F. 68 OHM 2% 1/4 W.	3
33	5010-09036-00	R65	RESISTOR, C.F. 100 OHM 5% 1/4 W.	1
34	5010-09187-00	R4, R6, R7, R16, R19, R25	RESISTOR, C.F. 150 OHM 5% 1/4 W.	6
35	5010-09508-00	R11, R13, R15	RESISTOR, C.F. 270 OHM 2% 1/4 W.	3
36	5010-09416-00	R18	RESISTOR, C.F. 470 OHM 5% 1/4 W.	1
37	5010-08992-00	R1, R20, R23	RESISTOR, C.F. 560 OHM 5% 1/4 W.	3
38	5010-09358-00	R42, R5, R9, R17, R48, R54, R74	RESISTOR, C.F. 1 K OHM 5% 1/4 W	8
39	5010-09314-00	R3, R22	RESISTOR, C.F. 1.2 K OHM 5% 1/4 W.	2
40	5010-08998-00	R59, R72, R73	RESISTOR, C.F. 2.2 K OHM 5% 1/4 W.	3
41	5010-08997-00	R60, R63	RESISTOR, C.F. 2.7 K OHM 5% 1/4 W.	2
42	5010-08983-00	R30, R31 R40, R44, R58	RESISTOR, C.F. 3.3K OHM 5% 1/4 W.	5
43	5010-08991-00	SEE NOTE #2	RESISTOR, C.F. 4.7 K OHM 5% 1/4 W.	
44	5010-09034-00	R49, R46, R53	RESISTOR, C.F. 10 K OHM 5% 1/4 W.	3
45	5010-08774-00	R47, R55, R57, R62	RESISTOR, C.F. 22K OHM 5% 1/4 W.	4
46	5010-09113-00	R61	RESISTOR, C.F. 33K OHM 5% 1/4 W.	1





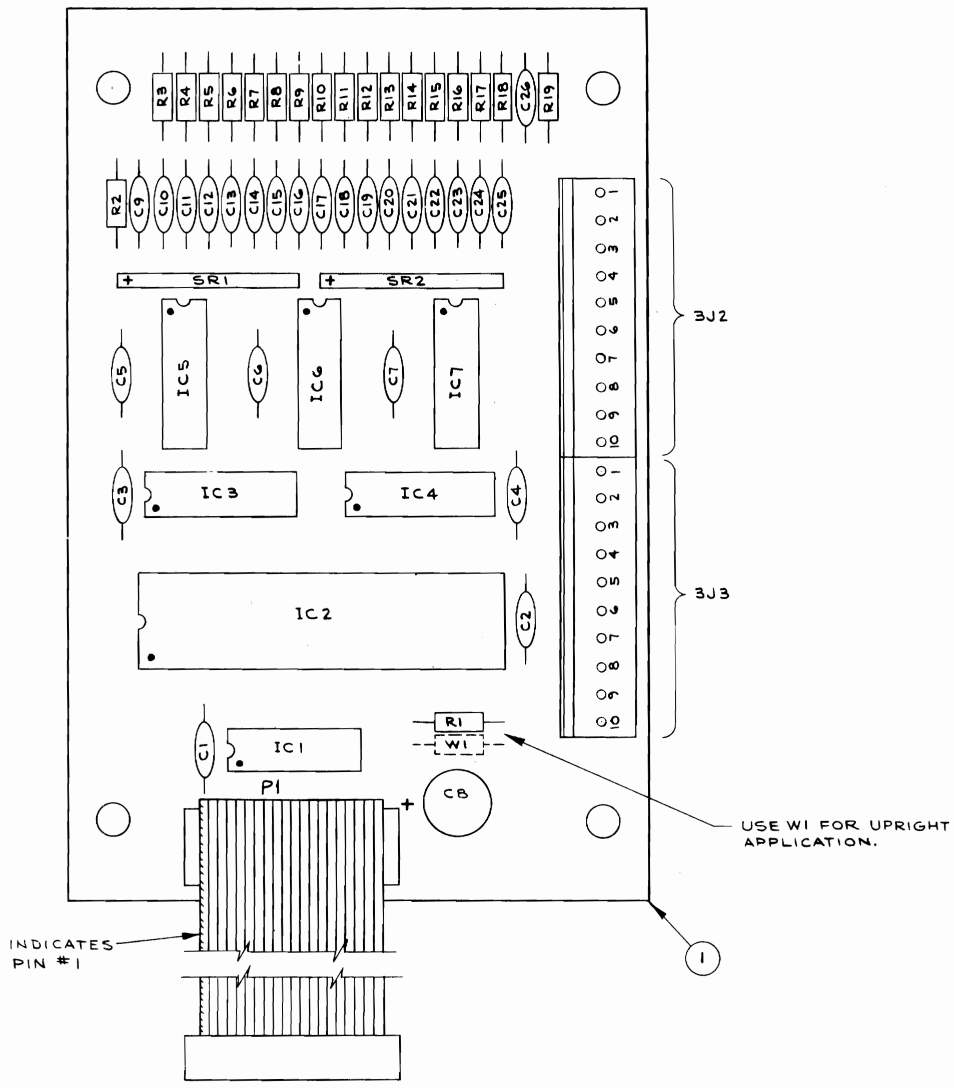
R-8731 CPU Board Logic Diagram
(Sheet 1 of 2)

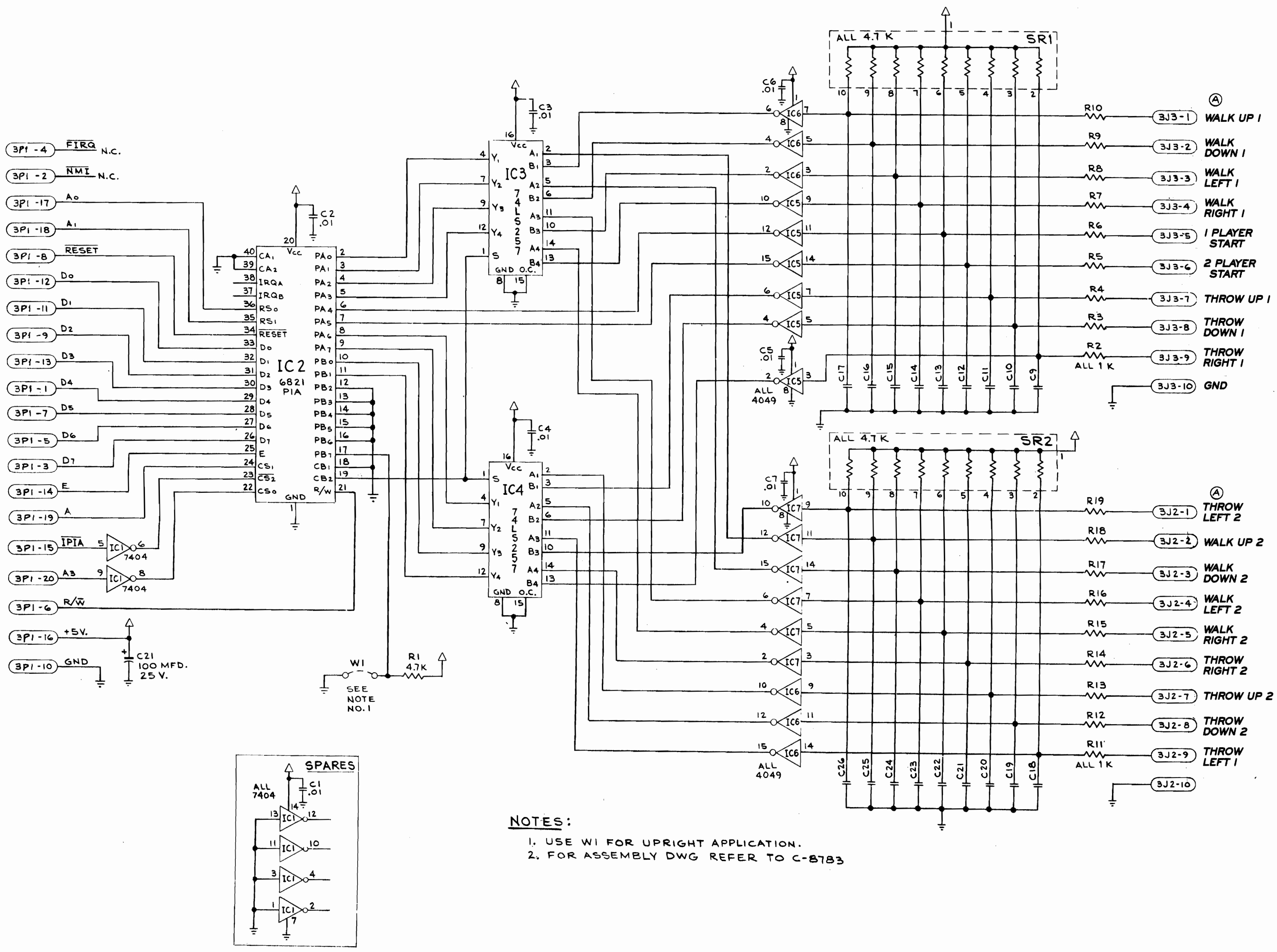


SPARE		
LOC.	LOGIC	QTY.
4B	7400	1
4K	74LS74	1
5I	74LS393	1
5J	7486	2
6D	4011	2
6H	74LS139	1
6I	7410	2

R-8731 CPU Board Logic Diagram (Sheet 2 of 2)

BILL OF MATERIAL				
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	NO. REQ'D.
1	5772-09680-00		BARE P.C. BOARD	1
2	5430-08972-00	IC2	6821 PIA	1
3	5310-08975-00	IC5, IC6, IC7	4049 CMOS HEX INVERTOR	3
4	5280-09013-00	IC1	7404 HEX INVERTER	1
5	5281-09485-00	IC3, IC4	74LS257 QUAD DATA MULTIPLEXER	2
6	5019-09362-00	SR1, SR2	4.7K OHM 9 RES. 10 PIN SIP	2
7	5010-09358-00	R2 THRU R19	RESISTOR, C.F. 1K OHM 5% 1/4 WATT	18
8	5010-08991-00	R1	RESISTOR, C.F. 4.7K OHM 5% 1/4 WATT	1
9	5010-09534-00	W1	RESISTOR, C.F. 0 OHM 1/4 WATT	1
10	5043-09065-00	C9 THRU C26	CAPACITOR, CERAMIC DISC, 470 PFD. 50V. X7R ±20%	18
11	5040-09421-00	C8	CAPACITOR, ELECT. RADIAL 100 MFD. 25 VOLT, +50-10%	1
12	5043-08980-00	C1 THRU C7	CAPACITOR, CERAMIC DISC, .01 MFD. 50 V. +80-20%	7
13	5795-09540-00	P1	20 PIN RIBBON CABLE ASS'Y.	1
14	5791-09444-00	3J2, 3J3	10 PIN HEADER 09-65-1101	2

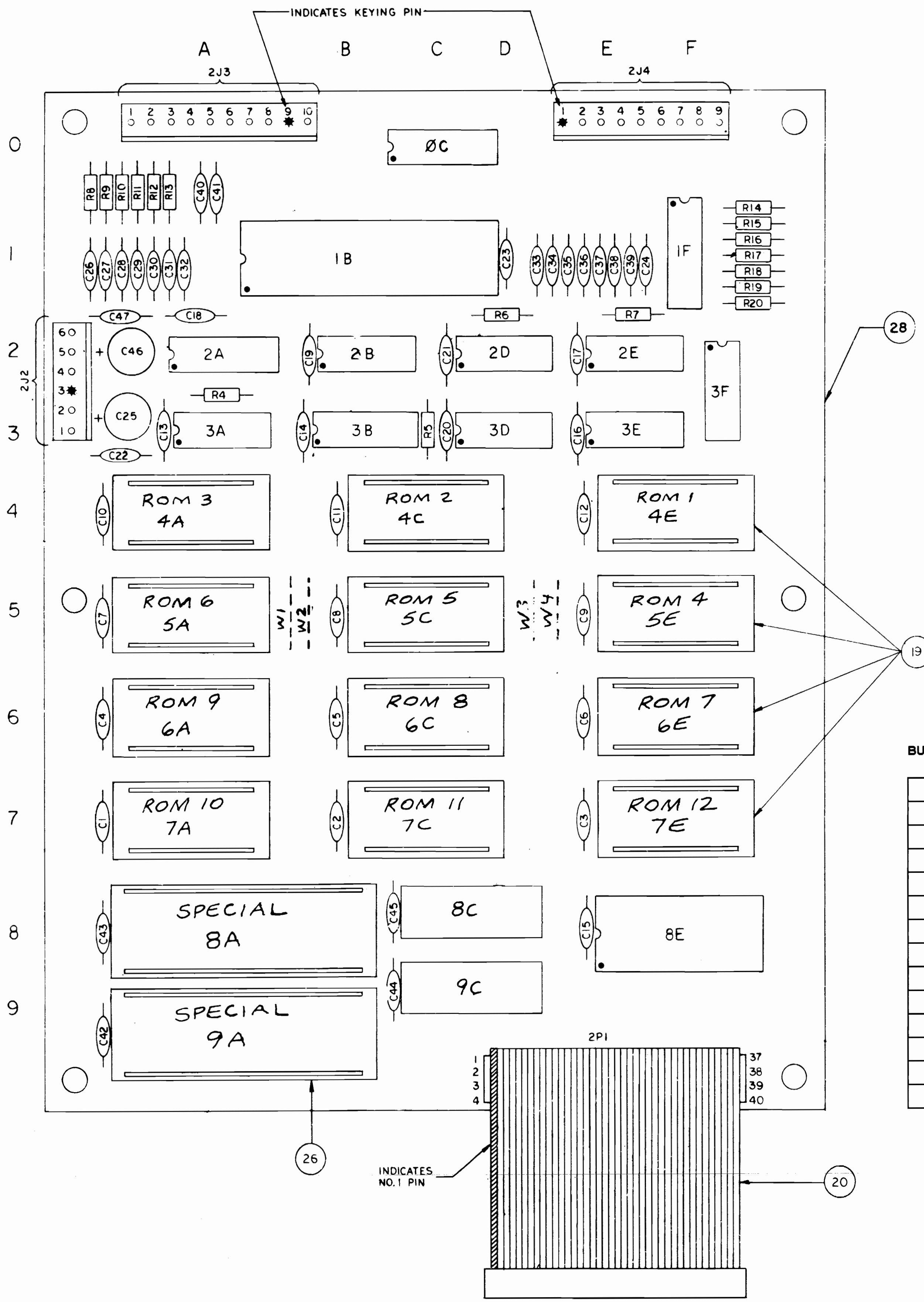




NOTES:

1. USE W1 FOR UPRIGHT APPLICATION.
2. FOR ASSEMBLY DWG REFER TO C-8783

C-8783 Interface Board Assembly and Logic Diagram



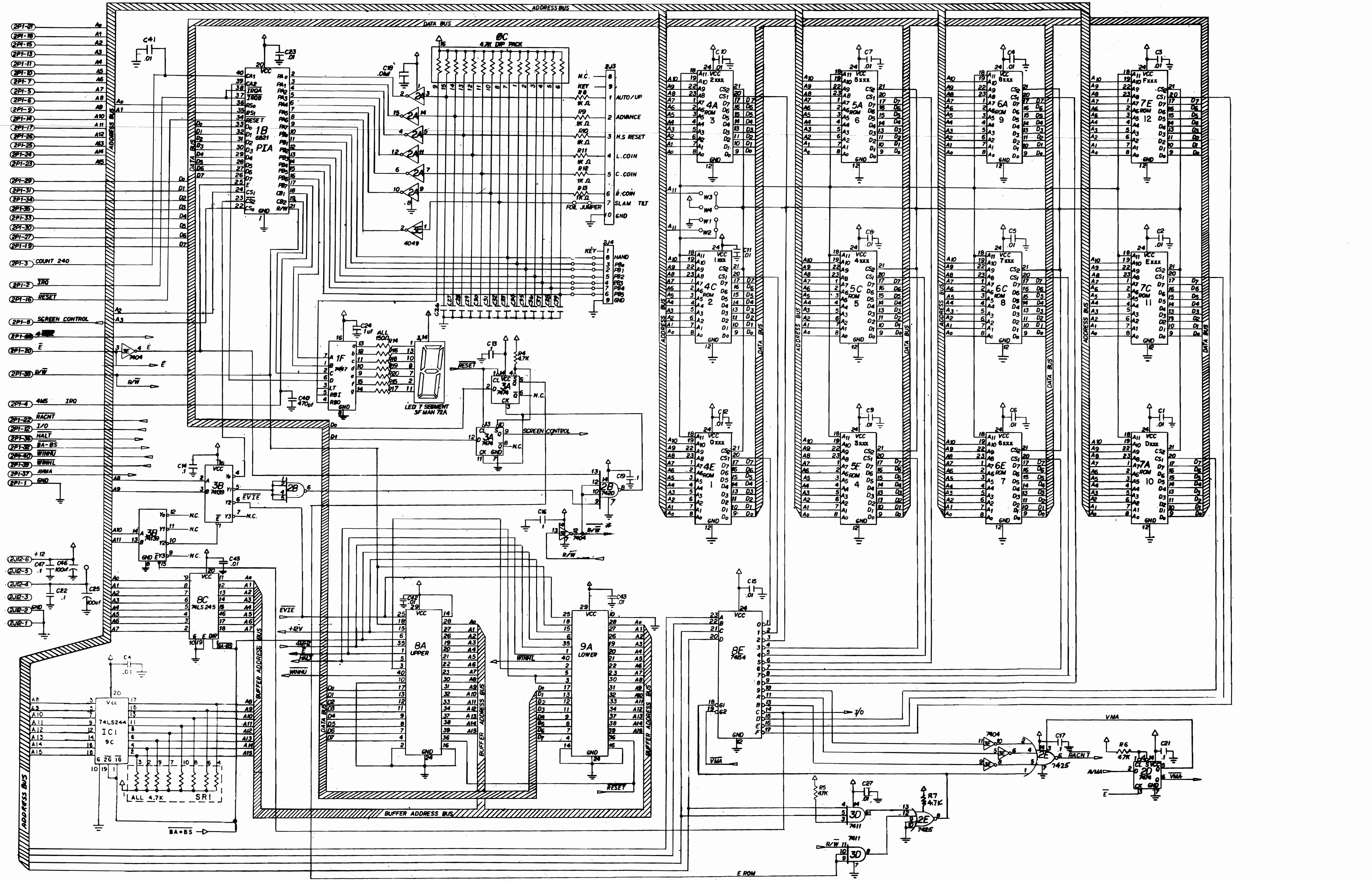
BUBBLES

CHIP CODE	ROM #	PART #	COLOR
4E	ROM 1B	A-5343-10071-B	BROWN
4C	ROM 2B	A-5343-10072-B	BROWN
4A	ROM 3B	A-5343-10073-B	BROWN
5E	ROM 4B	A-5343-10074-B	BROWN
5C	ROM 5B	A-5343-10075-B	BROWN
5A	ROM 6B	A-5343-10076-B	BROWN
6E	ROM 7B	A-5343-10077-B	BROWN
6C	ROM 8B	A-5343-10078-B	BROWN
6A	ROM 9B	A-5343-10079-B	BROWN
7A	ROM 10B	A-5343-10080-B	BROWN
7C	ROM 11B	A-5343-10081-B	BROWN
7E	ROM 12B	A-5343-10082-B	BROWN
JUMPER			W1, W3

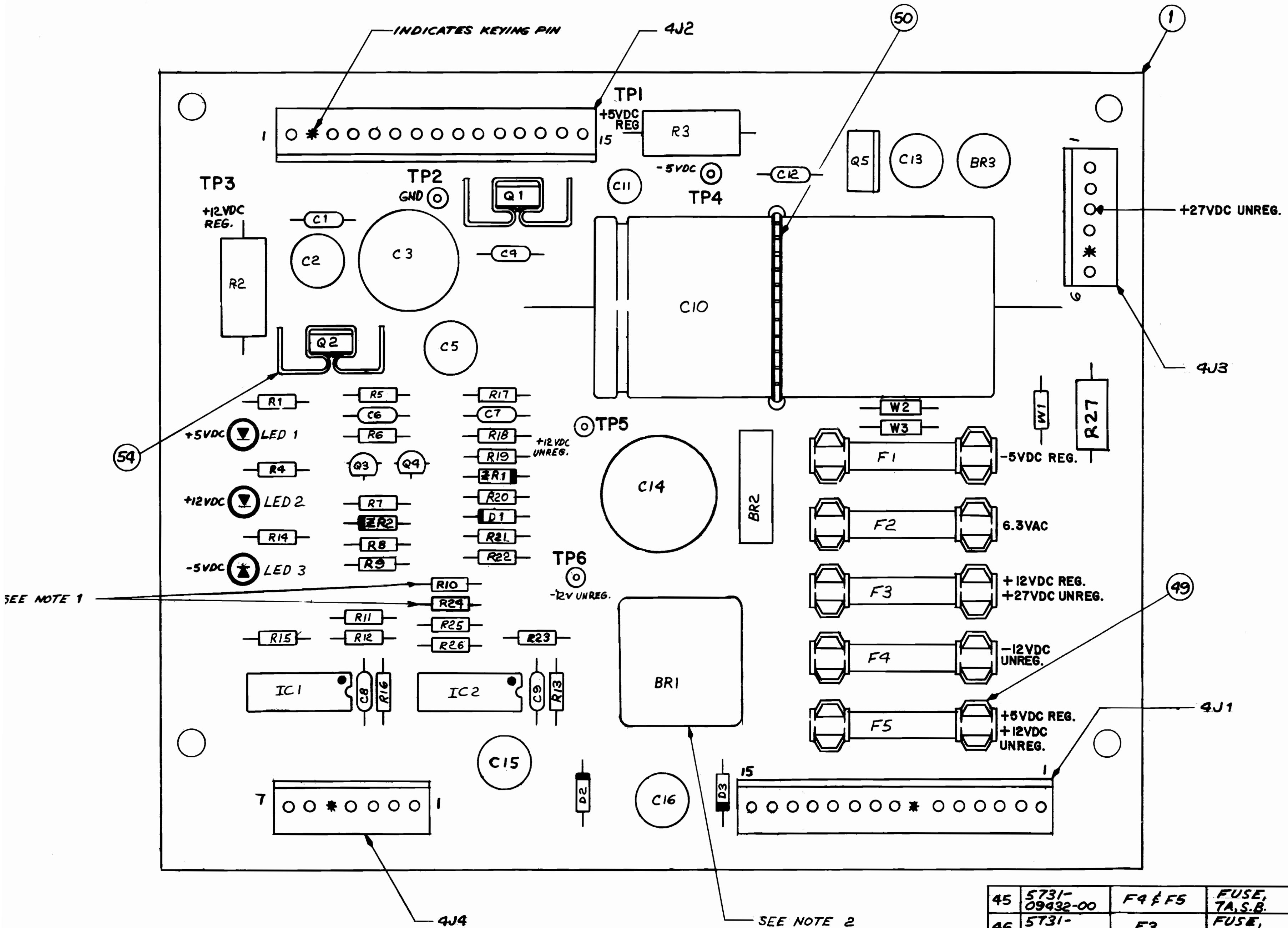
BILL OF MATERIALS

ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5771-09840-00		BARE P.C. BOARD	1
2	5280-09407-00	1F	7447BCD TO 7SEG LED DISPLAY	1
3	5280-09478-00	2D, 3A	7474 DUAL-D TYPE FLIP-FLOP	2
4	5281-09246-00	3B	74LS139 DUAL 2 TO 4 LINE DECODER	1
5	5280-09530-00	2B	7420 DUAL 4-INPUT NAND	1
6	5280-09475-00	3D	7411 TRIPLE 3 INPUT AND	1
7	5280-09013-00	3E	7404 HEX INVERTERS	1
8	5280-09551-00	2E	DUAL 4 INPUT 7425 NOR GATE WITH STROBE	1
9	5280-09010-00	8E	74154 4 TO 16 LINE DEC./DEMULT.	1
10	5430-08972-00	1B	MC 6821 PIA	1
11	5019-09239-00	ØC	4.7K 15 RES 16 PIN DIP PACK	1
12	5010-09187-00	R14 THRU R20	RESISTOR C.F. 150 OHM 5% 1/4 W	7
13	5010-08991-00	R4 THRU R7	RESISTOR C.F. 4.7K OHM 5% 1/4W	4
14	5671-09411-00	3F	MAN 72A 7SEG LED DISPLAY	1
15	5043-08980-00	C1-C21, C23, C24, C42-45	CAP, CERAMIC .01 MFD 50V +80-20%	27
16	5040-09421-00	C25, C46	CAP ELEC 100 MFD. 25V RAD +50% -10%	2
17	5043-08996-00	C22, C47	CAP CERAMIC .1 MFD. 50V ± 20%	2
18	5043-09065-00	C26 THRU C41	CAP CERAMIC 470 PFD. 50V AXIAL +/ -20%	16
19	5700-09004-00		24-PIN I.C. SOCKET	12
20	5795-09611-00	2P1	40 PIN RIBBON CABLE ASS'Y 5"	1
21	5791-09038-00	2J2	HEADER, 6 PIN, 09-65-1061	1
22	5791-09444-00	2J3	10 PIN MALE CONN 09-65-1101	1
23	5791-09027-00	2J4	9 PIN CONN 09-65-1091	1
24	5310-08975	2A	4049 INVERTING HEX BUF.	1
25	5010-09358-00	R8 THRU R13	RESISTOR C.F. 1K OHM 5% 1/4 W	6
26	5700-08985-00		40-PIN I.C. SOCKET	2
28	D-9192		ROM/PIA BD. SUB-ASSEMBLY	1
29	SEE CHART	4A THRU 7E SEE CHART	GAME ROM ASSEMBLY	AS REQ'D
30	5010-09534-00	W1 THRU W4 SEE CHART	RESISTOR C.F. 0 OHM 1/4 WATT	AS REQ'D
31	5410 10083-00	8A, 9A	FULL CUSTOM I.C.	2
32	5281-09308-00	8C	I.C., 74LS245 OCTAL BUS/LINE DR/LINE RCVR	1

D-9144 ROM Board Assembly Drawing



D-9144 ROM Board Logic Diagram



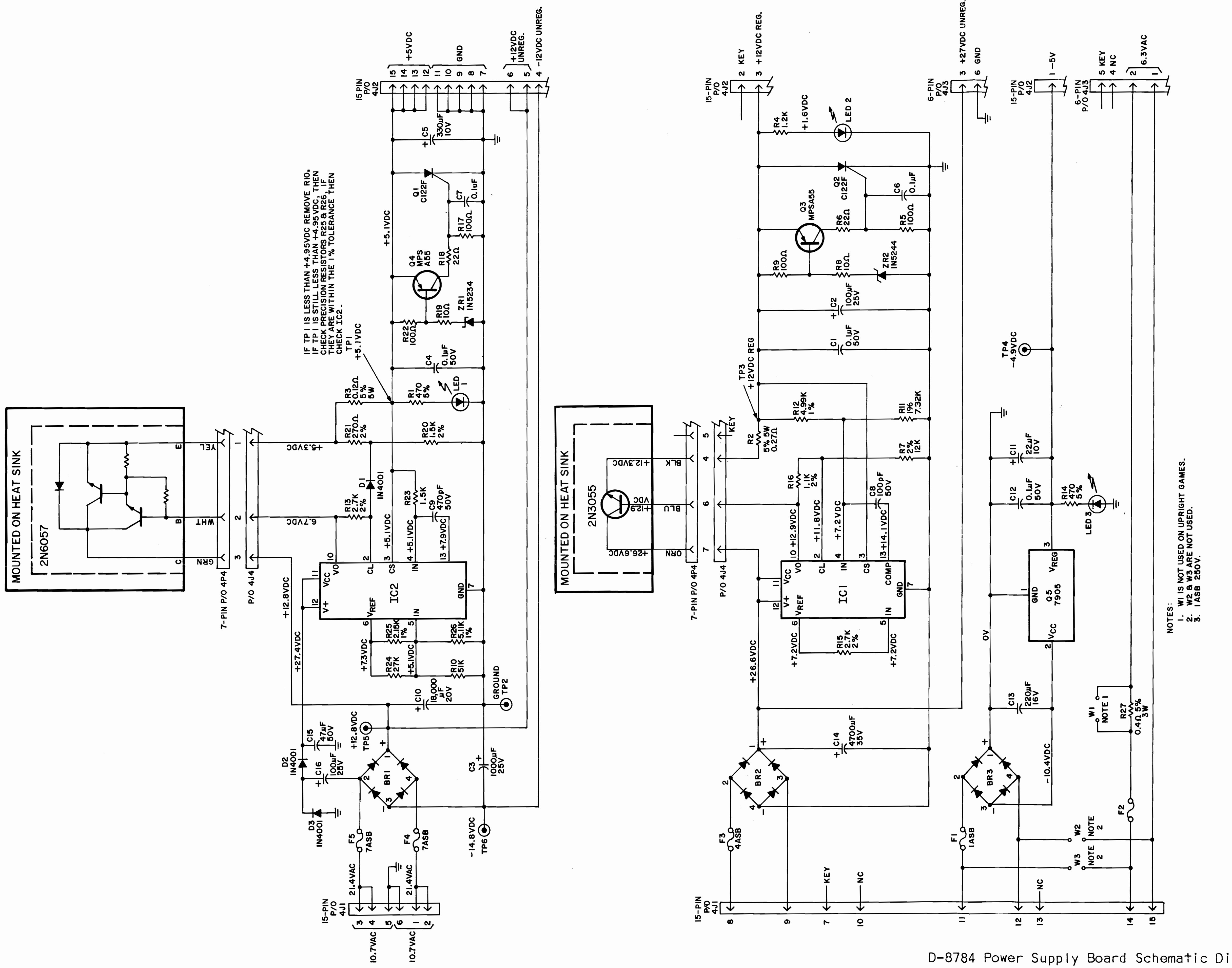
NOTES

1. REMOVE R10 IF +5VDC IS LESS THAN 4.95 VDC.
2. BR1 MUST BE MOUNTED 1/8" ABOVE SURFACE OF BOARD.

BILL OF MATERIAL

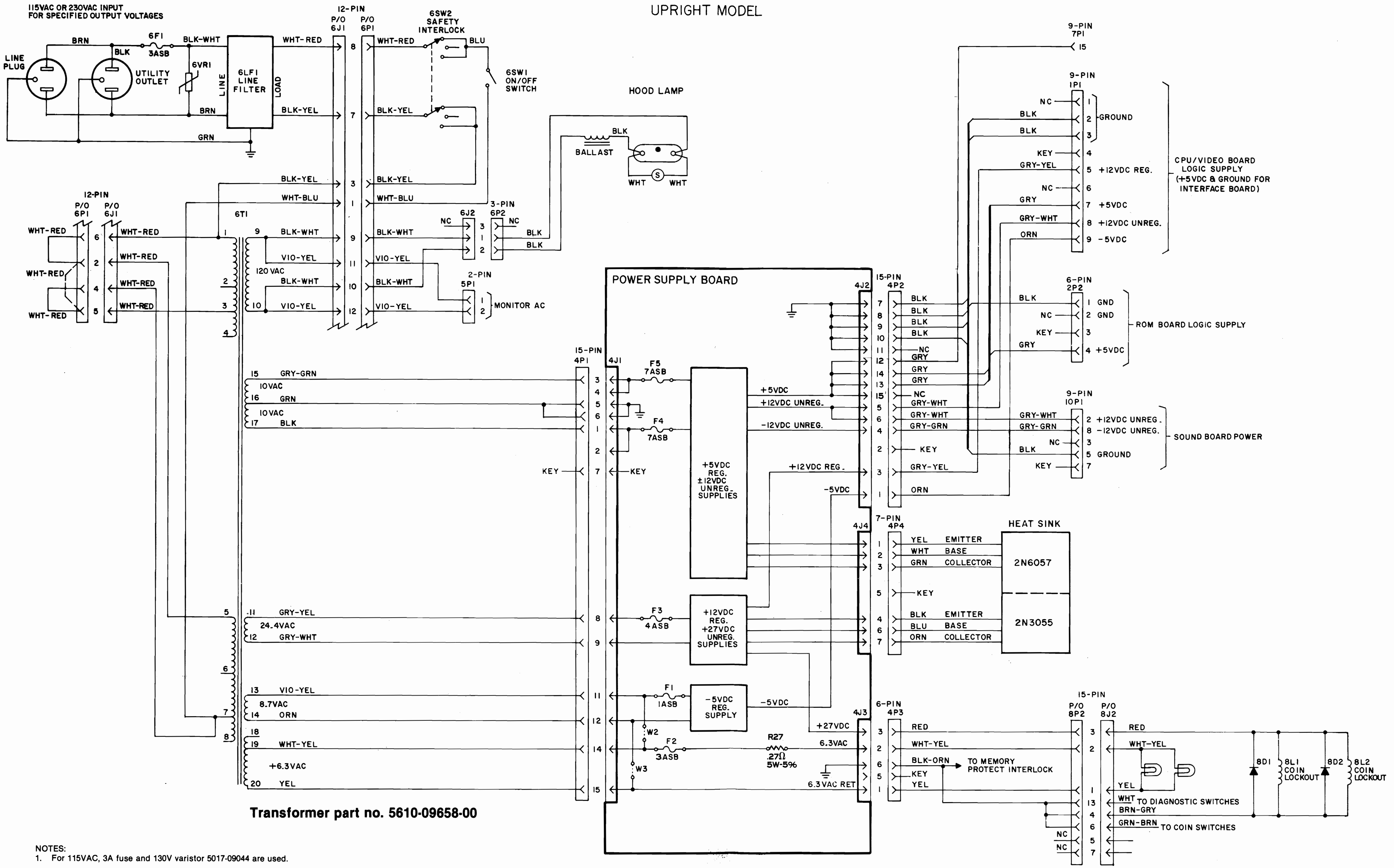
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5773-09679-00		BARE P.C. BOARD	1
2	5010-09085-00	R23	RESISTOR, 1.5K 5%, 1/4W	1
3	5010-09541-00	R13, R15	RESISTOR, 2.7K 2%, 1/4W	2
4	5010-09508-00	R21	RESISTOR, 870Ω 2%, 1/4 W	1
5	5010-09428-00	R20	RESISTOR, 1.5K 2%, 1/4 W	1
6	5010-09509-00	R16	RESISTOR, 1.1K 2%, 1/4 W	1
7	5010-09510-00	R7	RESISTOR, 12K 2%, 1/4 W	1
8	5010-09314-00	R4	RESISTOR, 1.2K 5%, 1/4 W	1
9	5010-09416-00	R1, R14	RESISTOR, 470Ω 5%, 1/4W	2
10	5013-09542-00	R11	RESISTOR, 7.32K 1%, 1/4 W	1
11	5013-09927-00	R12	RESISTOR, 4.99K 1%, 1/4W	1
12	5013-09426-00	R25	RESISTOR, 2.15K 1%, 1/4 W	1
13	5012-09429-00	R3	RESISTOR, .12Ω 5%, 5W	1
14	5012-09512-00	R2	RESISTOR, .27Ω 5%, 5W	1
15	5012-09037-00	R27	RESISTOR, 0.4Ω 5%, 3W	1
16	5013-09665-00	R26	RESISTOR, 5.11K 1%, 1/4 W	1
17	5010-09434-00	R6, R18	RESISTOR, C.F. 22Ω ±5% 1/4W	2
18	5010-09036-00	R5, R9, R17 & R22	RESISTOR, C.F. 100Ω ±5% 1/4W	4
19	5010-09039-00	R8, R19	RESISTOR, C.F. 10Ω ± 5%, 1/4W	2
20	5010 09534-00	W1	RESISTOR, 0Ω	1
21	5043-08996-00	C6, C7	CAPACITOR, 0.1μf CERAMIC +80% -20% 50V	2
22	5040-09421-00	C2, C16	CAPACITOR, 100MFD, 25V RADIAL +50% -10%	2
23	5040-09422-00	C15	CAPACITOR, 47 MFD, 50V RADIAL +50% -10%	1
24	5040-09420-00	C3	CAPACITOR, 1000MFD. 25V RADIAL +75% -10%	1
25	5040-09419-00	C10	CAPACITOR, 18,000MFD 20V AXIAL +75% -10%	1
26	5040-09423-00	C5	CAPACITOR, 330 MFD 10V RADIAL +50% -10%	1
27	5040-09504-00	C14	CAPACITOR 4700MFD 35V RADIAL +50% -10%	1
28	5043-09446-00	C1, C4 & C12	CAPACITOR .1MFD 50V AXIAL Z5U -20 +80%	3
29	5043-08065-00	C9	CAPACITOR 470PFD 50V AXIAL X7R ± 10%	1
30	5043-09492-00	C8	CAPACITOR 100 PFD 50V AXIAL S2L ± 5%	1
31	5040-09506-00	C13	CAPACITOR 220MFD 16V RADIAL +50% -10%	1
32	5040-09493-00	C11	CAPACITOR 22MFD 10V RADIAL +50% -10%	1
33	5070-06258-00	D1, D2 & D3	DIODE, IN4001	3
34	5075-09406-00	ZR1	ZENER, IN5234 ± 5% (6.2V)	1
35	5075-09662-00	ZR2	ZENER IN5244 ± 5% (14V)	1
36	5190-09430-00	Q3, Q4	TRANSISTOR, MPS A55	2
37	5130-09661-00	Q1, Q2	SCR 8 AMP, 100 V	2
38	5250-09515-00	Q5	VOLTAGE REGULATOR, 7905	1
39	5460-09424-00	IC1, IC2	VOLTAGE REGULATOR, 723	2
40	5100-09690-00	BR1	BRIDGE RECTIFIER, 35 AMP, 200V	1
41	5100-09513-00	BR2	BRIDGE RECTIFIER, 4.0A, 50V	1
42	5100-09514-00	BR3	BRIDGE RECTIFIER, 1.0A, 50V	1
43	5671-09019-00	LED1, LED2, LED3	LED, RED	3
44	5824-09298-00	TP1 — TP6	TERMINAL # 1502-1 (TEST POINT)	4
45	5731-09432-00	F4 & F5	FUSE, 7A, S.B.	2
46	5731-06314-00	F3	FUSE, 4A, S.B., 250V	1
47	5731-06569-00	F1	FUSE, 1A, S.B. 250V	1
48	5731-09651-00	F2	FUSE, 5A, S.B. 250V	1
49	5732-09178-00		FUSEHOLDER,	10
50	03-7520		TIE WRAP	1
51	5791-09074-00	4J1 & 4J2	HEADER, 15 PIN 09-65-1151	2
52	5791-09030-00	4J3	HEADER, 6 PIN 09-65-1061	1
53	5791-09497-00	4J4	HEADER, 7 PIN 09-65-1071	1
54	5705-09663-00		HEAT SINK	2
	5706-09688-00		HEAT SINK	0
55	5010-09682-00	R10	RESISTOR C.F. 51K ± 5% 1/4 W	1
56	5010-09324-00	R24	RESISTOR, C.F. 27K, ±5% 1/4W	1

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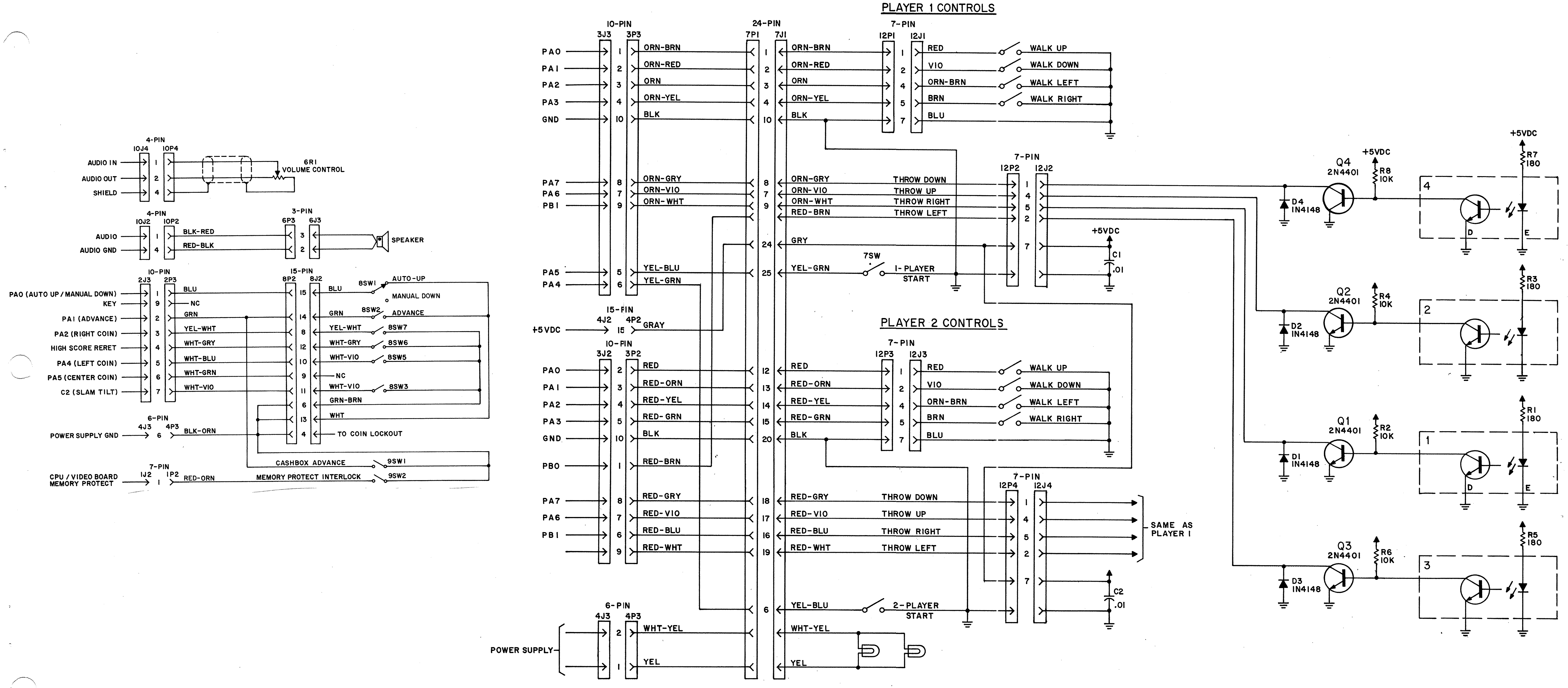


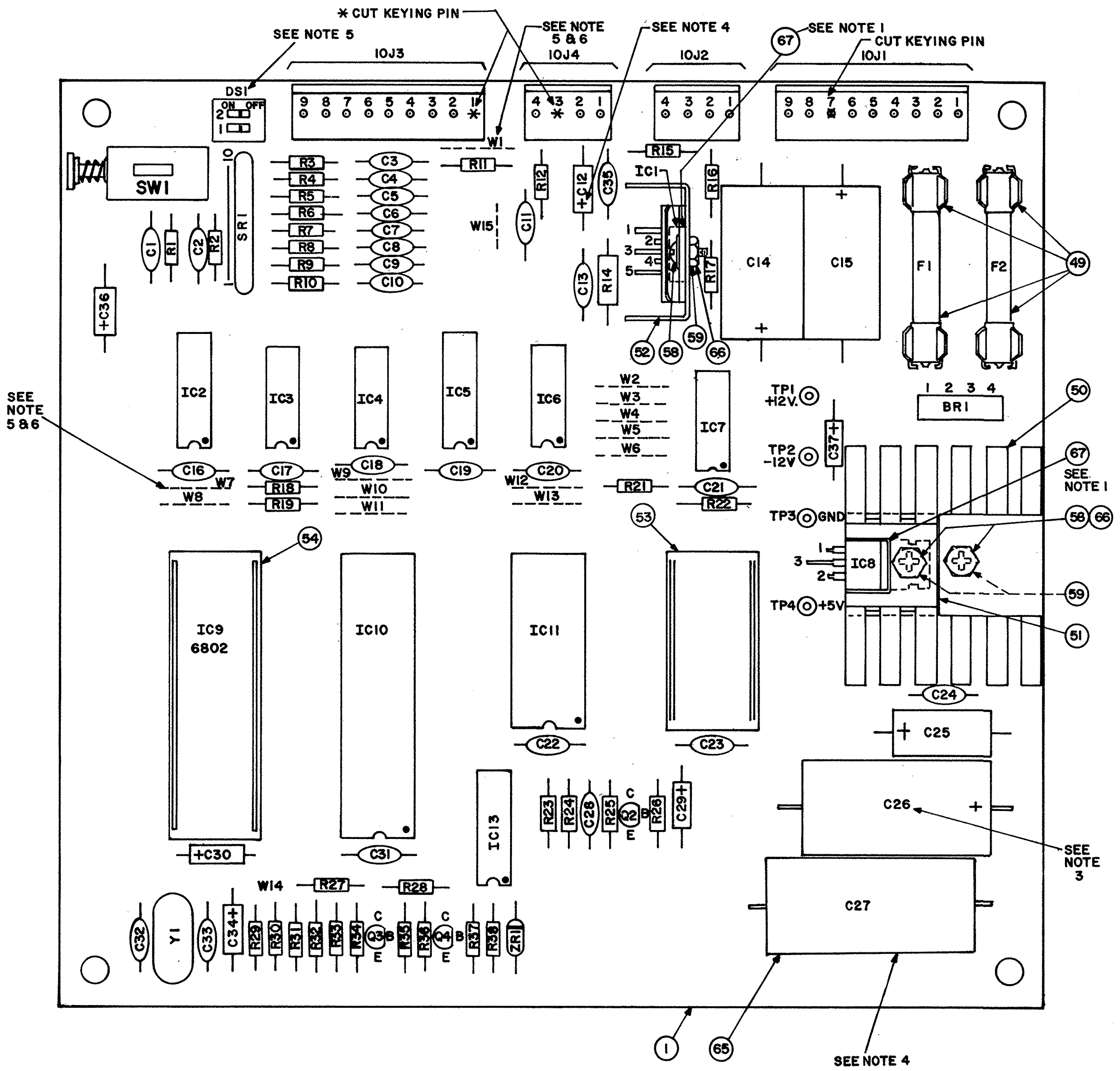
D-8784 Power Supply Board Schematic Diagram

UPRIGHT MODEL



NOTES:
1. For 115VAC, 3A fuse and 130V varistor 5017-09044 are used.
2. For 230VAC, 1A fuse and 275V varistor 5017-09063 are used.
3. Jumper wires on 6P1 shown with solid lines are connected for 115VAC operation. Only the one shown with a dashed line is connected for 230VAC operation.
4. For low-line conditions (103.5 or 207.0VAC) move WHT-RED wire from 6T1-3 to 6T1-2 and move WHT-RED and WHT-BLU wires from 6T1-7 to 6T1-6.
5. For high-line conditions (132.0 or 264.0VAC) move WHT-RED wire from 6T1-3 to 6T1-4 and move WHT-RED and WHT-BLU wires from 6T1-7 to 6T1-8.


PLAYER 1 CONTROLS
PLAYER 2 CONTROLS
10-PIN 3J3 3P3
24-PIN 7P1 7J1
7-PIN 12P1 12J1
7-PIN 12P2 12J2
7-PIN 12P3 12J3
7-PIN 12P4 12J4
15-PIN 4J2 4P2
10-PIN 3J2 3P2
6-PIN 4J3 4P3
4-PIN 10J4 10P4
4-PIN 10J2 10P2
3-PIN 6P3 6J3
10-PIN 2J3 2P3
15-PIN 8P2 8J2
6-PIN 4J3 4P3
7-PIN 1J2 1P2
PA0
PA1
PA2
PA3
GND
PA7
PA6
PB1
PA5
PA4
PB0
+5VDC
ORN-BRN
ORN-RED
ORN
ORN-YEL
BLK
ORN-GRY
ORN-VIO
ORN-WHT
RED-BRN
GRY
YEL-BLU
YEL-GRN
GRAY
RED
RED-ORN
RED-YEL
RED-GRN
RED-GRY
RED-VIO
RED-BLU
RED-WHT
WHT-YEL
YEL
VIO
BRN
BLU
WALK UP
WALK DOWN
WALK LEFT
WALK RIGHT
THROW DOWN
THROW UP
THROW RIGHT
THROW LEFT
7SW
1-PLAYER START
2-PLAYER START
C1 .01
C2 .01
SAME AS PLAYER 1
POWER SUPPLY
AUDIO IN
AUDIO OUT
SHIELD
6R1 VOLUME CONTROL
AUDIO
AUDIO GND
BLK-RED
RED-BLK
SPEAKER
PA0 (AUTO UP / MANUAL DOWN)
KEY
PA1 (ADVANCE)
PA2 (RIGHT COIN)
HIGH SCORE RERET
PA4 (LEFT COIN)
PA5 (CENTER COIN)
C2 (SLAM TILT)
NC
GRN
YEL-WHT
WHT-GRY
WHT-BLU
WHT-GRN
WHT-VIO
GRN-BRN
WHT
8SW1 AUTO-UP
MANUAL DOWN
8SW2 ADVANCE
8SW7
8SW6
8SW5
8SW3
TO COIN LOCKOUT
POWER SUPPLY GND
BLK-ORN
CASHBOX ADVANCE 9SW1
MEMORY PROTECT INTERLOCK 9SW2
CPU / VIDEO BOARD MEMORY PROTECT
RED-ORN
Q4 2N4401
Q2 2N4401
Q1 2N4401
Q3 2N4401
D4 1N4148
D2 1N4148
D1 1N4148
D3 1N4148
R8 10K
R4 10K
R2 10K
R6 10K
R7 180
R3 180
R1 180
R5 180
+5VDC
4
2
1
3
D
E



SOUND BOARD JUMPERS

JUMPERS USED	TOM TYPE	FORMAT	GAMES USED IN
W2, W5, W7, W9, W10, W15	2K x 8 2516, 2716	Sound & Speech	Gorgar, Blackout, Firepower, Black Knight, Jungle Lord, Pharaoh.
W1, W2, W5, W7, W9, W10, W15	2K x 8 2516, 2716	Sound Only	Defender Video & Pin, Solar Fire, Barracora, Hyperball, Stargate, Cosmic Gunfight, Varkon, Time Fantasy.
W3, W4, W5, W7, W10, W15	4K x 8 2532	Sound & Speech	Sinistar (Upright & Cockpit Front)
W1, W3, W4, W5, W7, W10, W15	4K x 8 2532	Sound Only	Robotron, Joust Video & Pin, Bubbles, Sinistar (Cockpit Rear)
W1, W2, W4, W5, W7, W10, W15	2K x 8 2516, 2716	Sound Only	Warlock
W1, W3, W6, W7, W9 W11, W12, W15	512 x 8 7641	Sound Only	Big Strike

BILL OF MATERIAL

ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
1	01-2 01-146-6		BARE P.C. BOARD REV F	1
2	5370-09156-00	IC1	TDA 2002 V AUDIO AMPLIFIER	1
3	5280-09012-00	IC2	7442 BCD-DEC DECODER	1
4	5280-09073-00	IC3	7400 QUAD 2 INPUT NAND	1
5	5280-08973	IC4	7408 QUAD 2 INP. AND GATE	1
6	5310-09153-00	IC5	4050 BUFFER	1
7	5310-09154-00	IC6	4068 8 INPUT NAND GATE	1
8	5310-08971-00	IC7	4069 HEX INVERTER	1
9	5250-09157-00	IC8	7805 5 VOLT REG. W/TO 220 CASE	1
10	5430-08972-00	IC10	6821 P.I.A.	1
11	5340-09003-00	IC11	6810 RAM	1
12	5371-09152-00	IC13	1408 D/A CONVERTER	1
13	5160-08938-00	Q2, Q3, Q4	2N4401 NPN TRANSISTOR	3
14				
15	5075-09018-00	ZR1	IN5996A 6.8V ZENER DIODE	1
16				
17	5100-09357-00)	BR1	MDA 200/3N253	1
	5100-09158-00)		BRIDGE RECTIFIER	0
18	5520-09020-00	Y1	3.58 MHz CRYSTAL	1
19	5010-08991-00	R1,R18,R19,R21,R22, R27,R30,R31, R32	RESISTOR, FC, 4.7K OHM, 5% 1/4 WATT	9
20	5010-09036-00	R2 thru R10	RESISTOR, FC, 100 OHM, 5% 1/4W	9
21	5010-09358-00	R12,R15,R28,R36,R38	RESISTOR, FC, 1K OHM, 5% 1/4W	5
22	5010-09181-00	R14	RESISTOR, FC, 1 OHM, 10% 1/2 WATT	1
23	5010-09161-00	R16	RESISTOR, FC, 2.2 OHM, 5% 1/4 WATT	1
24	5010-09361-00	R17	RESISTOR, FC, 220 OHM, 5% 1/2 WATT	1
25				
26	5010-08983-00	R23, R24, R26	RESISTOR, FC, 3.3K OHM, 5% 1/4 WATT	3
27	5010-09179-00	R25	RESISTOR, FC, 3.3M OHM, 5% 1/4 WATT	1
28	5010-09035-00	R29	RESISTOR, FC, 47K OHM, 5% 1/4 WATT	1
29	5010-09034-00	R33, R35, R37	RESISTOR, FC, 10K OHM, 5% 1/4 WATT	3
30	5010-09039-00	R34	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
31	5043-08980-00	C1, C16 thru C23, C31	CAPACITOR, CER. .01 MFD. 50V. +80%, -20%	10
32	5043-09065-00	C2 thru C10	CAPACITOR, CER. 470 PFD. 50V. +-20%	9
33	5043-09345-00	C11	CAPACITOR, CER. .001 MFD. +-20% 100V.	1
34	5040-09365-00	C12, C30, C36	CAPACITOR, ELECT. 1 MFD. 63V. -10 +50%	3
35	5043-08996-00	C13, C24, C35	CAPACITOR, CER. .1 MFD. 50V. +-20%	3
36	5040-09165-00	C14	CAPACITOR, ELECT. 1,000 MFD. 16V. +-20%	1
37	5040-09164-00	C15	CAPACITOR, ELECT. 470 MFD. 10V. +-20%	1
38	5040-08986-00	C25	CAPACITOR, ELECT. 100 MFD. 10V. +-20%	1
39	5040-08893-00	C26	CAPACITOR, ELECT. 1,000 MFD. 25V. +-20%	1
40	5040-09376-00	C27	CAPACITOR, ELECT. 4700 MFD. 16V. +-20%	1
41	5043-09180-00	C28	CAPACITOR, CER. 47 PFD. 1K V. +-20%	1
42	5040-09343-00)	C29	CAPACITOR, ELECT. 10 MFD. 20V	1
43	5043-09169-00	C32, C33	CAPACITOR, CER. DISC, 27 PFD. 1KV. +-10%	2
44	5041-09163-00	C34	CAPACITOR, TANTALUM 2.2 MFD. 15V. +-20%	1
45	5041-09031-00	C37	CAPACITOR, TANTALUM 1 MFD. 25V. +-20%	1
46	5641-09658-00)	SW1	MOMENTARY SWITCH SPDT	1
47	5645-09330-00	DS1	2 STD, DIP SWITCH	1
48	5731-06314-00	F1, F2	4 AMP SLOW BLOW FUSE	2
49	5732-09178-00		FUSEHOLDER	4
50	5705-09172-00		HEAT SINK THERMALLOY #6072B	1
51	5705-09173-00		HEAT SINK THERMALLOY #6071B	1
52	5705-09199-00		HEAT SINK THERMALLOY #6030	1
53	5700-09004-00		24 PIN SOCKET	1
54	5700-08985-00		40 PIN SOCKET	1
55	5791-09027-00	10J1, 10J3	9 PIN MALE CONNECTOR 09-65-1091	2
56	5791-09028-00	10J2, 10J4	4 PIN MALE CONNECTOR 09-65-1041	2
57				
58	4006-01003-06		6-32x3/8" P-PH-S	3
59	4406-01117-00		6-32 HEX NUT	3
60	5010-09534-00		0 OHM RESISTOR	A/R
61	5824-09248-00	TP1 THR TP4	TERMINAL #1502-1	4
62	5010-09363-00	R11	RESISTOR, FC, 5.6K OHM 5% 1/4 WATT	1
63				
64	5019-09362-00	SR1	RESISTOR, 4.7K OHM 10 PIN SIP	1
65	03-7520-1		TIE WRAP	1
66	4703-00007-00		#6 EXT. LOCKWASHER	3
67	20-9229		THERMAL COMPOUND	.01

NOTES:

1. USE THERMAL COMPOUND BETWEEN IC1 AND IC8, AND HEAT SINKS.
2. CAUTION: AVOID STATIC DISCHARGE DAMAGE TO MOS LOGIC.
3. SYMBOLS SHOWN ON COMPONENTS ARE FOR REFERENCE ONLY.

   DO NOT SCREEN OR STAMP.
4. OBSERVE INDEX MARK OF ALL INTEGRATED CIRCUITS;

   DIODES D1, D2, AND ZR1;

   CAPACITORS C12, C14, C15, C25, C26, C27;

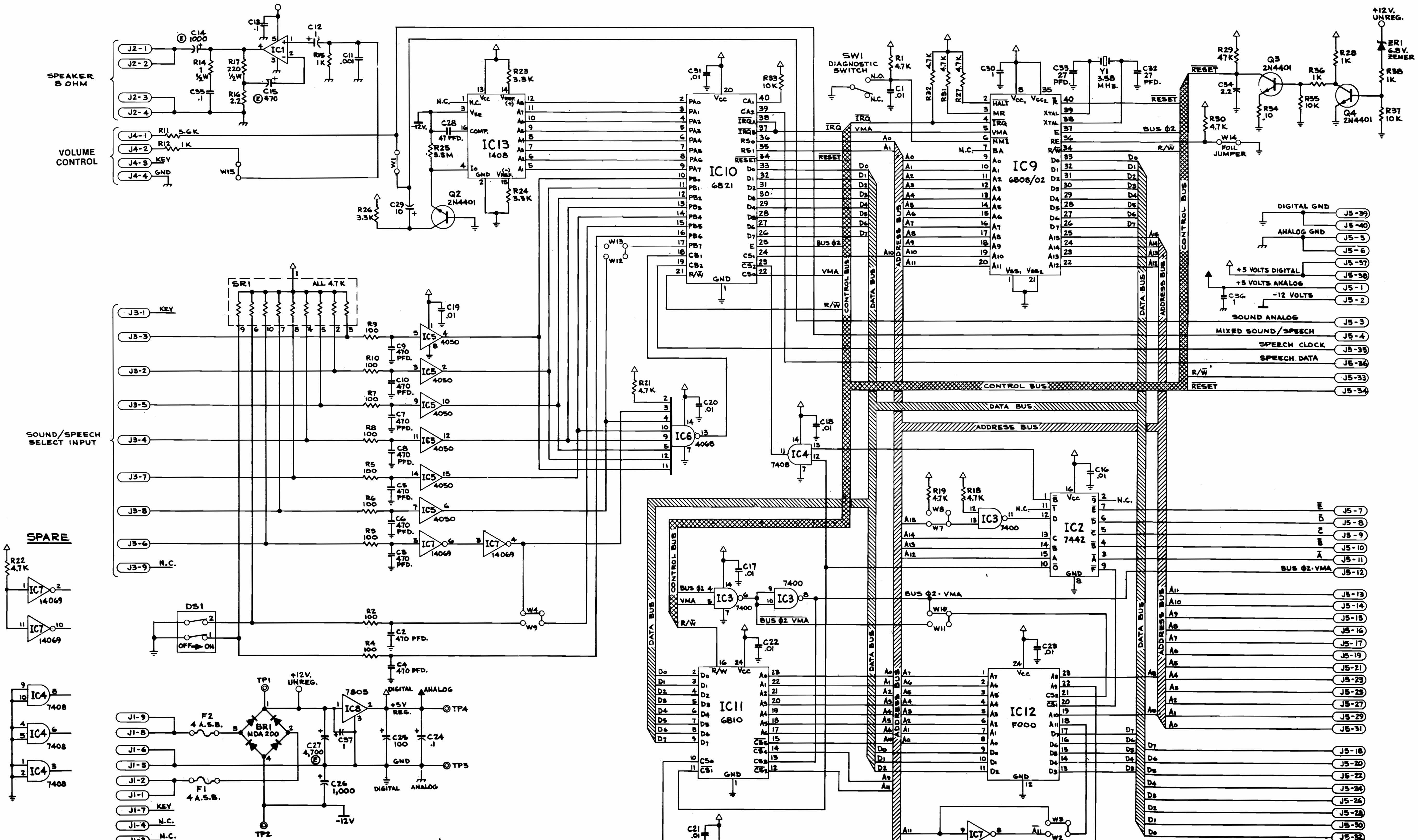
   CONNECTORS 10J1, 10J2, 10J4, 10J3, 10J5;

   POSITION OF TRANSISTORS Q1, Q2, Q3, Q4.
5. JUMPERS

   W1), W3), W4), W5), W10) IN

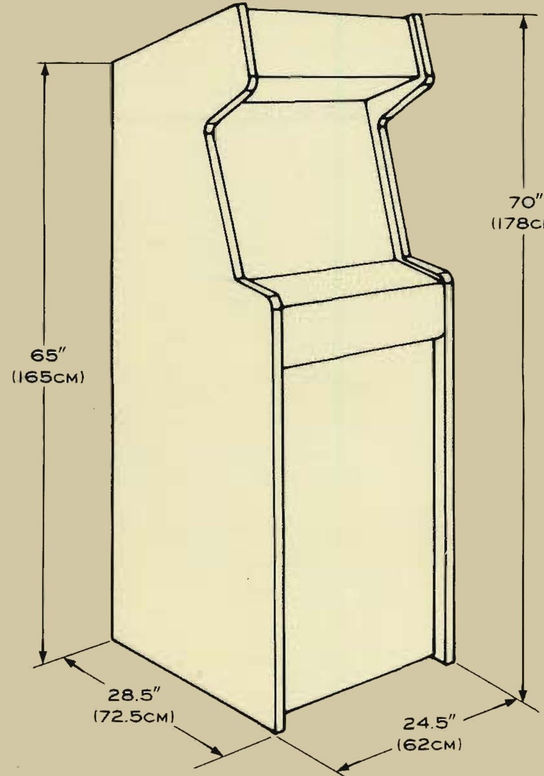
   W2), W6), W9), W11), W12), W13) OUT

D-8224 Sound Board Assembly Drawing



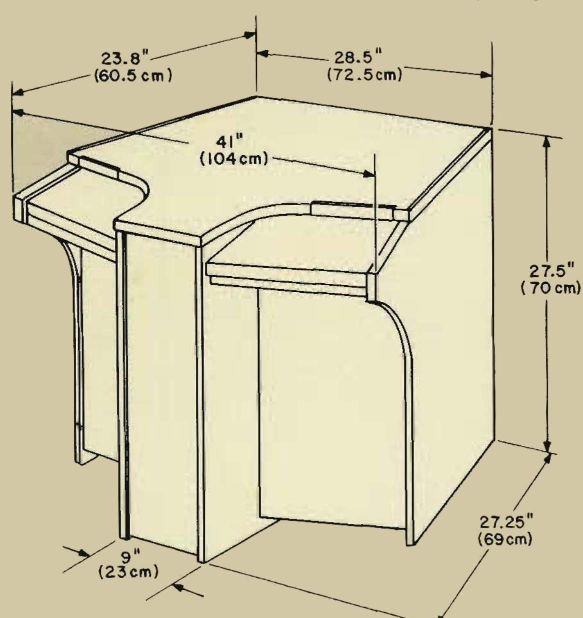
NOTES:
1. ALL RESISTORS, 1/4 WATT UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS, MFD. UNLESS OTHERWISE NOTED.

D-8224 Sound Board Logic Diagram



UPRIGHT
Weight
270 lbs. (122.5 kg.) uncrated
290 lbs. (131.5 kg.) crated

COCKTAIL TABLE
Weight
205 lbs. (93 kg.) uncrated
220 lbs. (100 kg.) crated



POWER REQUIREMENTS
115/230 VAC Nominal, 50/60Hz
@1.7/0.85A 192W
(20A surge for one cycle
at power turn on)
Normal Line = 98-126VAC
196-252VAC
High Line* = 113-145VAC
226-290VAC
Low Line* = 88-113VAC
176-226VAC
*Transformer jumpers required.
See service manual.

ENVIRONMENT
Operating Temperature
0° to +45°C ambient
(+32° to +113°F)

Storage Temperature
−40° to +65°C ambient
(−40° to +149°F)
90% RH at 40°C (104°F), non-condensing

MONITOR
19" Color Raster*
non-interlaced
UL, CSA & DHHS Approved

VIDEO SYSTEM**
256 Colors, 340 x 240 PIXEL Resolution
6809E Microprocessor
ROM: 48K BYTES
Video and Scratch RAM: 50K BYTES
CMOS RAM: 1Kx4

SOUND SYSTEM**
6808 Microprocessor
ROM: 4K BYTES

JOYSTICK
Two 8-way optical-digital
Two 8-way leaf switch

**Patent pending

Specifications subject to change without notice.

SERVICE
For the back-up that keeps you out-front, call Williams toll-free at 800/621-125.
In Illinois, call toll-free at 800/572-1324.

Warning—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been certified to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to correct the interference.

Williams®
ELECTRONICS, INC.
3401 N. California Ave., Chicago, IL 60618
(312) 267-2240, Telex 253095